

(9) CLAIMS

1. A system for accessing a substantially comprehensive record of an immediate environment of a user, comprising:

a substantially continuous record of information from a plurality of time-correlated input data streams;
means for specifying a query into the record; and
means for displaying a result of a query made using said means for specifying a query.

2. The system of claim 1 comprising:

the input data streams are taken from a set consisting of video data, audio data, data representative of the user's location and changes thereof, data representative of measurements of the user's physical state, and data representative of local ambient environment conditions of said immediate environment, and current and reference standard time.

3. The system of claim 1, further comprising:

means for collecting said record.

4. The system of claim 1 comprising:

the plurality of time-correlated input data streams includes at least one annotation data stream associated with at least one of said time-correlated input streams.

5. The system of claim 4 comprising:

the annotation data stream is from a set consisting of transcription of speech, information representative of people present on camera or speaking, information representative of location, information representative of user activities, information representative of aspects of video and audio input not directly input by said collecting means, information representative of the user's biometric or emotional states, and information representative of other events of said immediate environment not directly input by said collecting means.

6. The system of claim 4, further comprising:

means for providing said annotation data stream.

7. The system of claim 6 comprising:

the means for providing said annotation data stream is an input device by which said user generates annotations.

8. The system of claim 6 comprising:

the means for providing said annotation data stream is an automatic input device wherein annotation is implemented based on other data in the record.

9. The system of claim 8 wherein the means of providing said annotation data stream is triggered by detection that data in at least one of said time-correlated input data streams matches a predetermined pattern.

10. The system of claim 9, further comprising:

means for specifying at least one said predetermined pattern and an annotation representative thereof to insert in the record when the predetermined pattern is detected.

5 11. The system of claim 6 comprising:

the means for providing said annotation data stream includes means for using a remote data source.

12. The system of claim 1 comprising:

the means for displaying a result includes means for presenting a time-bounded segment of at least one of said time-correlated input streams from the record.

13. The system of claim 12 comprising:

said means for presenting provides a presentation of a time-bounded segment of a plurality of said streams from the record wherein the presentations are overlaid.

14. The system of claim 13, wherein one of said streams is a video data stream, comprising:

overlaying the video data stream with subtitles visible during video playback.

15. The system of claim 13, wherein one of said streams is a video data stream, comprising:

overlaying the video data stream by inserting word balloons visible during video playback.

5 16. The system of claim 4 comprising:

the means for displaying a result of a query includes means for presenting a set of annotations.

10 17. The system of claim 4 comprising:

the means for specifying a query includes means for identifying a target time-bounded segment of the record.

18. The system of claim 17 comprising:

the means for identifying includes means for finding a segment based on the attributes contained in the record during the segment and means for specifying a set of attributes of interest for testing whether the segment matches.

15 19. The system of claim 18, further comprising:

said set of attributes includes a similarity metric, wherein the means for identifying identifies the target time-bounded segment based on strength of similarity under the similarity metric to a second segment; and
means of identifying the second segment.

20. The system of claim 19 wherein the second segment is an interval of time immediately prior to the present.

21. The system of claim 1, further comprising:

means for identifying a plurality of users and for proving system use
5 authorization for the users .

22. The system of claim 21 comprising:

the means for displaying requires proof of authorization via said means for
identifying a plurality of users and for proving system use authorization before
displaying data from the record.

10 23. The system of claim 21, further comprising:

means for identifying a subset of the record and for providing authorization
for viewing the subset to another person or system.

24. The system of claim 1, further comprising:

means of extracting a subset of the record and transmitting an extracted
15 said subset to a secondary system or a device compatible with the system.

25. The system of claim 1, further comprising:

means for compressing the record by deleting information.

26. The system of claim 25 comprising:

the means for compressing the record includes a level-of-user-interest metric, deleting information based upon identifying uninteresting information in the record in accordance with said level-of-user-interest metric.

27. The system of claim 26 wherein the interestingness metric consists of one or more criteria including changes in annotation, biometrically-determined interest or excitement level, frame-to-frame video change, overall similarity between a selected segment of said time-correlated input data streams and segments which precede said selected segment.

28. The system of claim 26 wherein the deleting information is based upon reducing the frame rate of a video data stream of said time-correlated input data streams .

29. The system of claim 26 wherein the plurality of time-correlated input data streams includes at least one annotation data stream associated with at least one specified one of said time-correlated input streams and wherein the deleting of information is based upon discarding input stream data and retaining annotations of said at least one annotation data stream.

30. The system of claim 26, wherein the record comprises a portable part and an archival part, the system further comprising:

means for transmitting a subset of the record wherein deleting information

is based upon transmitting information to be deleted from the portable part to the archival part.

31. A portable device for capturing a substantially comprehensive record of an immediate environment of a user, comprising:

5 a portable housing;

associated with said housing, one or more data collection devices; and

integrated with said housing, a time-keeping device, a data storage device,

and a programmable device for correlating all data captured by the data collection devices based upon time reported by the time-keeping device and for storing so-correlated data on the storage device.

32. The device of claim 31, further comprising:

associated with the housing at least one input device, the programmable device further operable to use input from each said input device to record time-stamped annotations in the record.

33. The device of claim 31 comprising:

the programmable device having program code for determining a segment of the record to be uninteresting and to compress the record by deleting or degrading segments so-determined.

34. The device of claim 31, further comprising:

a communications port for transmitting a subset of the record stored on the

data storage device.

35. A wearable device for querying a substantially comprehensive record of an immediate environment of a user, comprising:

a portable housing;

5 associated with said housing, at least one data output device, and at least one input device for specifying data queries; and

10 integrated with said housing, a data storage device containing a data record and a programmable device for accepting queries from the at least one input device, for identifying sections of the record based on the queries, and for displaying the results of the queries on the at least one output device.

36. The device of claim 35, further comprising:

associated with the housing, an identification device for identifying a user as authorized to make said queries.

37. A system for data collection comprising:

15 a portable housing; and

interconnected within said housing, data collection means for capturing data representative of an immediate vicinity of the system, integration means for correlating said autobiographical data, and memory means for storing said autobiographical data.

38. The system as set forth in claim 37, said data collection means comprising:
audio-video devices for capturing photo-images and accompanying sound in
the immediate vicinity of said system.

39. The system as set forth in claim 38, said audio-video devices further
comprising:

a camera data processor, and

a remote camera lens for transmitting photo-images to said camera data
processor.

40. The system as set forth in claim 38, said audio-video devices further
comprising:

an audio signal processor, and

a remote microphone for transmitting audio signals to said audio signal
processor.

41. The system as set forth in claim 37, said data collection means comprising:
global positioning system (GPS) for capturing GPS data of said system.

42. The system as set forth in claim 37, said data collection means comprising:
connected to an end-user of the system, biometric sensors for capturing
system user biometric readings.

43. The system as set forth in claim 37, said data collection means comprising:
environmental sensors for capturing environmental condition data in the
immediate vicinity of said system.

44. The system as set forth in claim 37, said data collection means further
comprising:

connected to said integration means, at least one direct data input port for
receiving digital data from a remote source.

45. The system as set forth in claim 37, further comprising:
feedback means for controlling said system and for monitoring data
collection in real time.

46. The system as set forth in claim 45, said feedback means further
comprising:
a heads-up display for monitoring data which comprises perceivable
stimulus data.

47. The system as set forth in claim 45, said feedback means further
comprising:

an electromechanical display and command entry panel.

48. The system as set forth in claim 45, said feedback means further
comprising:

an audio transducer for audibly transmitting sound data collected by said data collection means.

49. The system as set forth in claim 37, said integration means further comprising:

5 a programmable device including routines for real-time integrating of the autobiographical data, storing the autobiographical data, and downloading autobiographical data to an off-board data storage apparatus.

50. The system as set forth in claim 45, said feedback means further comprising:

10 means for retrieving autobiographical data selectively based on predetermined search parameters.

51. The system as set forth in claim 49, further comprising:
routines for editing 323, 325 the autobiographical data.

52. A process for generating autobiographical data, the method comprising:

15 providing an integrated apparatus for collecting data representative of perceptual stimuli in the immediate vicinity of a person;

continuously collecting said data;

in real-time, integrating said data in accordance with predetermined relational characteristics of said perceptual stimuli into a content retrievable data
20 collection; and

storing said data collection in a memory.

53. The process as set forth in claim 52, said collecting further comprising:
receiving time-correlated input data streams representative of real-time
information related to visual stimuli, audio stimuli, geophysical position, local
5 environmental conditions, and autobiographical biophysical condition of said
person.

54. The process as set forth in claim 53 wherein said data streams include
annotation data.

55. The process as set forth in claim 54 wherein said annotation data is
selected from a group including transcription of speech data, a digital marker
related to at least one of said data streams, a digital marker related to an interest
level of at least one of said streams, a digital marker related to biometric condition
of said person.

15 56. The process as set forth in claim 54 wherein said annotation data is
manually provided by said person.

57. The process as set forth in claim 54 wherein said annotation data is
automatically generated based on other data in a current one of said data streams.

58. The process as set forth in claim 57 wherein said annotation data is automatically generated based upon detection that said current one of said data streams matches a pattern of data in said memory.

59. The process as set forth in claim 54 wherein said annotation data is provided from a remote data source.

60. The process as set forth in claim 54 further comprising:
displaying data from said collection.

61. The process as set forth in claim 60, said displaying further comprising:
presenting a time-bounded segment of at least one stream of said data.

62. The process as set forth in claim 61 said presenting further comprising:
overlaying a plurality of streams of said data.

63. The process as set forth in claim 62 wherein said annotation data for overlaying of a video data stream and a transcription data stream is by inserting subtitles in the video data stream.

64. The process as set forth in claim 62 wherein annotation data for overlaying of a video data stream and a transcription data stream is by inserting a word balloon in the video data stream.

65. The process as set forth in claim 60, said displaying further comprising:
presenting a set of said annotations as a response to specifying a query.

66. The process as set forth in claim 65, said specifying further comprising:
identifying a target time-bounded segment of said collection.

5 67. The process as set forth in claim 66, said identifying further comprising:
specifying a set of attributes, and
finding the target time-bounded segment based on said attributes contained
in the collection during the target time-bounded segment.

68. The process as set forth in claim 66, said identifying further comprising:
specifying a similarity metric related to a first time-bounded segment, and
finding the target time-bounded segment based on a said similarity metric.

69. The process as set forth in claim 68 wherein said first time-bounded
segment is immediately prior to present time.

70. The process as set forth in claim 54, further comprising:
15 on-demand, compressing said data collection.

71. The process as set forth in claim 70, said compressing further comprising:
specifying deletion parameters, and
deleting information based upon said parameters.

72. The process as set forth in claim 71 wherein said deletion parameters include a parameter representative of data level of interest of the person.

73. The process as set forth in claim 72 wherein parameter representative of data level of interest of the person is selected from a group comprising changes in annotation, biometrically-determined interest or excitement level, frame-to-frame video change, and overall similarity between a current segment and earlier time-bounded segments.

73. The process as set forth in claim 71, said deleting further comprising:
deleting specified time-bounded segments while retaining the annotations related thereto.

74. The process as set forth in claim 52 wherein said memory includes a portable memory associated with said collecting and an archival memory and said storing further comprises transmitting a subset of said collection from said portable memory to said archival memory.

75. Surveillance apparatus comprising:
a portable housing; and
integrated with said housing, a camera, an audio recorder, a GPS, a data memory, and a programmable device for integrating all data captured by said camera, audio recorder, and GPS into an integrated, content-retrievable format and for storing and retrieving data so formatted from said memory.

76. The apparatus as set forth in claim 75, further comprising:
associated with said housing a biometric monitor for connecting to a subject,
and
said programmable device including routines for integrating data collected
5 by said monitor with said all data captured by said camera, audio recorder and
GPS.

77. The apparatus as set forth in claim 75, further comprising:
associated with said housing a local environmental condition data recorder,
and,
said programmable device including routines for integrating data collected
10 by said monitor with said all data captured by said camera, audio recorder and
GPS.

78. The system as set forth in claim 75, said programmable device further
comprising:

15 program code for analyzing a segment of said data based on at least one
predetermined parameter and for compressing the segment based on said
analyzing.

79. The system as set forth in claim 75, further comprising:
a mechanism for transmitting said captured data from said system.

80. The system as set forth in claim 75, further comprising:
associated with said housing, a mechanism for displaying said captured
data.

81. The system as set forth in claim 80, said programmable device further
comprising:

program code for accepting a data query, for identifying segments of the
captured data based on said query, and for displaying said segments on said
mechanism for displaying.